5.0 SUMMARY CONCLUSIONS AND DIRECTIONS FOR FUTURE RESEARCH

5.1 SUMMARY OF RESULTS

There are many conclusions of the research. Because the results presentation is extensive, a bulleted summary of key findings is presented in this section grouped by topic area. For each conclusion, the corresponding tables and figures are cited for easy follow-up reference. The text corresponding to each table should be consulted as well and can be found in the section with the two initial digits of the table. For example, Table 4.4-3 is discussed in Section 4.4.

5.1.1 About the Sample and Response Rates

- Over 70 percent of the valid sample was contacted. Response rates in individual states are not consistently or statistically significantly different whether the survey version focuses upon parks in the respondent's home state, or on parks in another region of the country. Any potential response bias due to interest in parks in the home region, versus elsewhere, appears to be minimal. (Tables 4.1-1 and 4.1-2).

- Variations examined in the survey design dealing with the amount of information, whether one or more parks were pictured, and whether WTP questions were asked for parks in one region or in three regions had no consistent statistical effect upon response rates. It is concluded that these features, in and of themselves, exerted little influence on the results through different response rates. (Table 4.1-3)

- Non-response bias was examined through a small telephone follow-up survey. Non-respondents have lower probability of visiting national parks and slightly lower income, which would decrease WTP responses. However, just as in the returned mail surveys, the large majority of telephone respondents felt protecting visibility at national parks is important, and would be willing to pay for visibility protection. Some non-response bias may exist, but the effect on the sample-wide WTP mean estimate appears to be relatively small. (Tables 4.3-1 through 4.3-4 and Section 4.4)

- The sample varies somewhat from national characteristics. It has a higher percentage of males and is somewhat older, which are characteristics that are related to lower WTP values. The sample also has somewhat higher income and education than the national average, which is related to higher WTP values. (Table 4.2-1) The effect of these sample characteristics can be adjusted for when applying the results in policy scenarios (Tables 4.5-16, 4.5-17, 4.5-18 through 4.5-22, 4.5-26 through 4.5-32).

5.1.2 Importance of Protecting Visibility at National Parks

- Protecting against air pollution decreasing the ability to see scenic vistas was a high priority for 72 percent of respondents and a medium priority for nearly all other respondents. (Table 4.4-7 and Table 4.6-1 where comments are summarized)

- Non-use related motives were as, or more, important, than use-related motives for protecting visibility at national parks. (Table 4.4-5)

- Improving visibility from current average conditions to somewhat above average conditions would enhance on-site enjoyment for about 95 percent of respondents. (Table 4.4-9)

- Over 90 percent of respondents would be willing to pay something for visibility protection at national parks. This sentiment was nearly equally strong for all three regions. Sentiment was strongest for protection in a region by residents of the same region. (Table 4.4-10)

- Preventing visibility degradation was felt to be slightly more important than obtaining improvements. (Table 4.4-11)

5.1.3 WTP for Specific Visibility Scenarios

- On the order of 83 percent stated non-zero WTP for the visibility scenarios presented. After deleting non-respondents and protest responses, the percent increases to 93 percent. Some respondents held very high values for visibility protection. Both the valid zero and high bids were highly correlated with income and with past and expected future national park visitation. (Tables 4.5-2, 4.5-4, Figure 4.5-2)

- The mean WTP values are quite similar for each of the three national park regions investigated. The mean WTP values (adjusted to the percent for visibility) are around $40 to $60 per year per household for the three scenarios considered. Values by residents of the same state as the illustrated park are typically higher than values for the same region by individuals who live outside the region. (Table, 4.5-10 and 4.5-12)

- Median bids are 25 to 50 percent of the means. This is to be expected as the distribution is necessarily truncated at zero and includes responses from individuals who have very large values, based upon income, visitation expectations and other reasons, for this visibility protection. (Table 4.5-14)

- The mean percent of the regional bid that is attributable to the specific park depicted in the photograph varies depending upon the park and whether respondents are from the same state or from other states. Residents from the same state assigned between 46 and 54 percent for pictured park while residents from other states assigned between 38 and 41 percent for the pictured park. These shares exceed 1/n, where n is the number of parks in each region. This may be because the pictured parks are more prominent than most of the other parks in the same region. (Tables 4.5-24 and 4.5-25, and Figure 4.5-3)

- Differences in characteristics of respondents appear to explain differences in mean WTP for residents of different states for protection at the three national park regions. These characteristics include income and the probability of visiting parks in the region of focus. The influence of these characteristics is consistent across different focus regions. (Tables 4.5-11, 4.5-13, Tables 4.5-16 through 4.5-23 and 4.5-26 through 4.5-32)

- WTP bids are found to follow ex ante expectations in terms of their correlations to attitudes and opinions about protecting national parks, protecting visibility at national parks and WTP for this protection. (Table 4.5-15)

- Visibility value functions were examined that relate WTP to changes in visibility conditions and socio-economic characteristics of the respondent. The use of four different visual air quality measures, in separate estimations of the selected functional forms, does not appreciably alter the explanatory power of the regressions. The four measures were: visual range, natural log of the ratio of new to old visual range, average atmospheric transmission coefficient and the percentile of annual visual range conditions. (Tables 4.5-19 through 4.5-23 for regional WTP regressions, and 4.5-27 through 4.5-32 for individual park WTP regressions)

- Values were partitioned, sample-wide, to option price (32%), bequest values (37%) and existence values (31%). Residents of the same state as the focus park assigned higher percentages to option price than did non-residents. As a result, the share of the WTP that is assigned to bequest values and existence values for each park region shows smaller variability across state of residence than does option price. This reflects the higher probability of one's own visitation to parks in the same region as one is currently residing in. (Tables 4.5-32 through 4.5-34, and Figure 4.5-4)

5.1.4 CVM Method Findings

- About 11 percent of the respondents did not answer the WTP questions or gave apparent protest responses. About 7 percent gave apparently valid zero value responses. These are within normal ranges for CVM studies. (Table 4.5-2)

- Ex ante attempts to lead respondents to value only visibility changes were insufficient. Over two-thirds stated, after answering the WTP questions, that only a portion of their WTP estimate was for visibility at national parks in the specified region. The average percent for visibility was 62 percent. The follow-up question readdressing the part-whole issue appears to have worked well in helping to separate values for visibility from values for other concerns. This adjustment was used to compute visibility WTP results used throughout the report. (Table 4.5-3, Figure 4.5-1)

- Over 80 percent stated a self perceived accuracy of their WTP answers as either "very accurate" or "within the ballpark." Only 19 percent felt their answers were "somewhat inaccurate" or "probably very inaccurate." Self reported accuracy was not related to past visitation. Some have argued that inaccuracy may lead to overstated WTP responses. However, mean WTP decreased significantly as self reported accuracy decreased. Deletion of those individuals with low self reported accuracy would significantly increase, not decrease, the mean bids. This deletion was not done to maintain conservative results. (Table 4.5-6)

- About 40 percent of the respondents providing WTP responses provided the same WTP response for all three scenarios presented to them (including 7 percent all zero bidders). This finding is only recently being reported in CVM studies. In this study it may be due to:

    1. Anchoring and lack of attention. Uncertainty and lack of attention (or effort to quantify values) may lead to all equal responses. If values are uncertain and have some reasonable error, the difference in values across scenarios may not merit small adjustments in bids. Some respondents may see improving conditions from photo C to photo A as having a small additional value as compared to just obtaining photo B. Similarly, preventing photo D may have similar value to obtaining photo B. Given edit behavior, or the lack of desire to deal with small differences, the respondent may fail to adjust to the second and third scenarios and the same value is reported for all three scenarios.

    2. Making a contribution. The all equal bids may reflect a tendency to make a contribution to visibility protection, regardless of the level of protection. Some individuals also state that "if everyone paid then the problem would be solved." Because this all equal tendency has been observed in other surveys where the making of contributions would be much less likely, we discount this explanation as being dominant.

The mean of the all equal responses tend to be anchored upon the first WTP response. Because the means of WTP2 and WTP3 for respondents who do not provide all equal bids are larger than WTP1, this anchoring may therefore downward bias the WTP2 and WTP3 results, and downward bias the estimated slope of the underlying visibility value functions. (Tables 4.5-7 through 4.5-9)

- Differences in the level of information provided did not consistently influence the WTP results. Relatively minor characteristics of the scenario were deleted in one survey version with no impact upon response rates or mean WTP results. Fischhoff and Furby (1988) have indicated a need for a very detailed scenario development. It may be the case that omitting some minor features has minimal or offsetting impacts. (Table 4.5-18) Potential explanations range from (1) the omitted information may be relatively less significant than other design features, (2) the impacts are offsetting, to (3) the information may not have been well understood (which contradicts the pretest findings) and therefore has no effect.

- It has been argued that respondents must be presented with information on many other goods simultaneous to the presentation of the good for which WTP values will be elicited. This, in part, is to address the potential part-whole bias. Presenting information on only one region (Version 6), versus on three regions (Version 3), in the form of maps, photographs and questions had some minor impacts upon the results, and did not appear to lead to any consistent increase in the WTP results. Further, when a bid was elicited separately, but in the same survey instrument, for each of the three regions (Version 4), the bids again did not show any consistent or statistical difference. Individuals appeared to have addressed each national park region independently. (Table 4.5-18)

- If individuals had to simultaneously pay their stated WTP for all three regions, rather than for just one region, it is uncertain whether the total WTP would decrease as compared to the sum of the bids for all three regions. Survey Version 4 elicited a separate WTP for each of the three regions stating that the WTP for each region would be paid each year. The results of Version 4 were not statistically different from the other versions. (Table 4.5-18) However, other recent evidence on these types of aggregation issues suggests that a single WTP for all three regions at once may obtain a lower value than the sum of values for three separate WTP questions. This alternative was not examined.

- The sample-wide mean percentages of the WTP bids allocated to different motives (option price, bequest value and existence value) are all generally between 30 and 40 percent. From this it might be inferred that many or most individuals pay little attention to (or do not know) their allocation and simply allocate equal shares to each of three motives. However, the individual data reveal that this does not appear to be the case. Rather, a wide distribution of allocations is reflected and correlation analysis reveals statistically significant relationships to previously stated behavior and attitudes related to each motive. (Tables 4.5-33 through 4.5-35 and Figure 4.5-4)

5.1.5 Comparisons to Prior Related Studies

- The results here are 25 to 32 percent as large as the comparable scenario values obtained in the Southwest Parklands study (Schulze et al. 1981). These differences are primarily attributed to the visibility adjustment questions (Q-17), asking for region-wide bids, then disaggregating to a Grand Canyon NP value component, using annual versus monthly bids, sample differences, and other CVM design characteristics.

- The results are 13 to 45 percent larger than those for the Grand Canyon NP in Tolley et al. (1986). However, the later study is for a substantially different policy package. Tolley et al. obtain values for visibility protection at the Grand Canyon NP as the 3rd identified component of a policy package that first request WTP estimates for simultaneously protecting visibility in Chicago and throughout the eastern U.S. As a result, the valuation scenarios are quite different.

5.1.6 Conclusions

Some conclusions can be based upon the statistical analyses presented in Chapter 4, while others are impressions gained through review of surveys responses and written comments, other statistical analysis not presented, and evidence from the literature.

In general, respondents seemed to perceive the survey issues as valid and to make a sincere effort to answer the WTP questions accurately. The WTP responses are generally quite consistent with expressed attitudes and behavior. Nonetheless, valuation of such changes is not an easy, or precise, task. While 80 percent of respondents felt their WTP responses were "within the ballpark" or better, only 15 percent felt their responses were "very accurate" and a third of those were zero bidders. Inaccuracy is also potentially reflected in that a large percent of individuals gave the same response to all WTP questions. I.e., responses may reflect a rough estimate of value for these types of visibility changes, but their WTP responses may not be so accurate as to merit refinement for the exact differences across the scenarios.

In formulating WTP responses, respondents appear to have focused upon key information about the visibility scenario and visibility conditions. Among these may have been the percent of time conditions exist at each of the different regions. When answering the WTP questions, respondents also had difficulty separating the visibility impacts at national parks from other resource protection concerns facing national parks, but the follow-up question served to help clarify this difficulty and its magnitude upon the visibility value estimates.

It goes without saying that the estimates must be used with care. The statistical precision of the estimates, as reported in the tables in Chapter 4, may overstate the accuracy of the valuation. For example, the statistical precision of predicted WTP values in the visibility

value regression analyses is on the order of ± 10 percent. However, other uncertainties in the respondents' formation of the WTP responses, and in the researchers' interpretation of the data suggest the uncertainty may be much larger. We would find it reasonable to suggest the values may be indicative of an accuracy no better than ± 50 percent. But this should not be taken as an opportunity to argue for "true values" half, or double, what is reported here based upon selective identification of potential biases. For each potential upward bias, there is an offsetting potential downward bias, and vice versa. Therefore, the estimates must be taken as indicative of the range respondents feel best reflects their monetary values for the visibility scenarios presented.

Use of the estimates in policy analysis must also account for the sample characteristics versus the characteristics of the population to which the estimates would be applied. For example, at a minimum, coefficients in the visibility value functions should be used to adjust predicted values for the population of interest.

5.2 DIRECTIONS

Many research efforts could be undertaken, some with minor modifications to the existing instruments, that would further the understanding of societal values for visibility protection at national parks. These might include a version that asks a WTP for all three regions at once, which might be compared to the sum of WTP's obtained in Version 4 to test the impact of different levels of aggregation when asking for component values.

The survey results indicate a diminishing marginal utility (as reflected by diminishing marginal WTP) for visibility improvements, which is consistent with the other preservation value literature reviewed in Chapter 2. This may be an accurate reflection of underlying values, or may be an artifact of the structure of the WTP elicitation. If some respondents think of their first response more as a general contribution than a payment for a specific quantity of a good, then asking them a second WTP for a larger change may suggest they should give the same or a slightly larger response. This may look like diminishing marginal utility, but may not really be. Additional survey versions could test these issues by excluding Photo B and asking for WTP for visibility changes from Photo C to Photo A. The results of this comparison may also aid in interpreting the "all equal" responses and their impact upon the valuation by examining whether these responses remain anchored upon the first scenario.

The survey focused upon fairly substantial changes in average visibility conditions. It would also be of interest to consider impacts to only a limited number of days, which would result in smaller average visibility changes, to more fully examine the shape of a visibility value function. It would also be of interest to examine the effect of variations in the season of impact on the value responses.

The current survey could also be easily modified to more fully examine the impact of alternative information upon response rates and WTP responses. One important and useful test would be to dramatically reduce the background motives questions and the CVM scenario development, which would reduce the complexity of the instrument development for the researcher and reduce the effort to complete the instrument for the respondent.

More substantive extensions could also be considered. This might include the examination of substantially different visibility impacts such as plumes, different colors of haze, etc., and different policy packages, such as visibility impacts at other parks, combined haze and plume control, etc.

In general, several design and evaluation issues have been initially addressed and merit additional research. This includes more investigations into: the "all equal" responses; the accuracy of responses, including how respondents perceive the accuracy of their responses; and the use of follow-up questions to partition natural resource protection values to obtain values for the visibility component. More research is also merited on the issue of what information is most important to CVM scenario development, and when too much scenario detail overloads respondents to the point of reducing the quality of responses.

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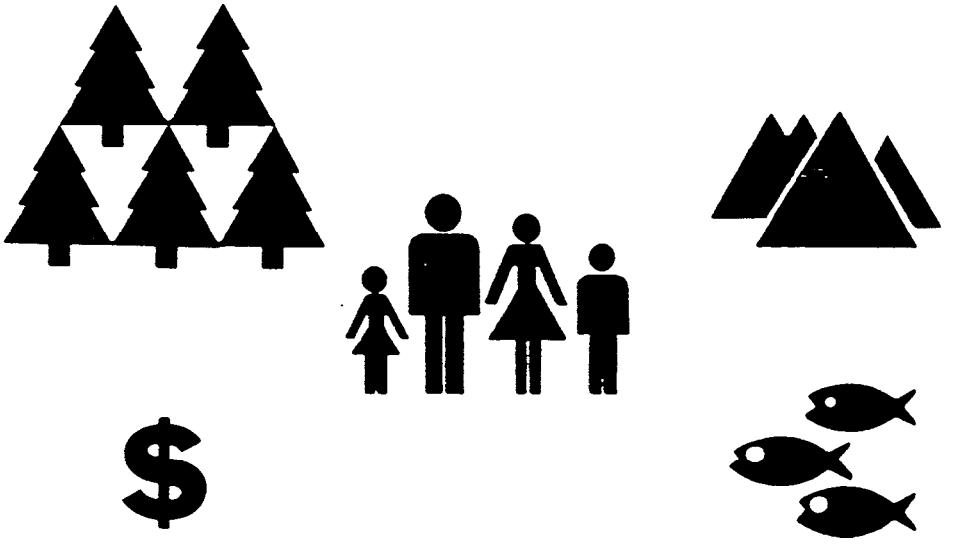
APPENDIX A

Sample Mail Survey Instrument

Managing Visibility at National Parks
What is Your Opinion?



Research conducted for
The Center for Economic Analysis
at the University of Colorado

ABOUT YOUR VISITS TO NATIONAL PARKS

Q-1 Have you personally ever visited any national park (including monuments and seashores)? (Circle number)

1 YES
2 NO ——→ If NO, then skip to Question Q-4

Q-2 The enclosed map shows national parks where visibility is considered to be an important resource. Have you personally ever visited any of the national parks shown on the map in each of the following regions?

Ever visited a national park in this region? (Circle YES or NO for each region)		If YES, how many days have you visited in just the last 2 years?
The Northwest	YES / NO	_____ DAYS
California?	YES / NO	_____ DAYS
The Southwest?	YES / NO	_____ DAYS
The Central U.S.?	YES / NO	_____ DAYS
The Northeast?	YES / NO	_____ DAYS
The Southeast?	YES / NO	_____ DAYS

Q-3 Have you personally ever visited the following national parks?

Ever visited this park? (Circle YES or NO for each park)		If YES, how many days have you visited in just the last 2 years?
Yosemite National Park in California	YES / NO	_____ DAYS
Grand Canyon National Park in Arizona	YES / NO	_____ DAYS
Shenandoah National Park in Virginia	YES / NO	_____ DAYS

Q-4 Thinking about the next 5 years, about how likely are you to visit any of the national parks shown on the map in each of the following regions? (Circle number of best response for each region)

	DEFINITELY WILL NOT VISIT	PROBABLY WILL NOT VISIT	MIGHT VISIT	PROBABLY WILL VISIT	DEFINITELY WILL VISIT
California	1	2	3	4	5
The Southwest	1	2	3	4	5
The Southeast	1	2	3	4	5

Q-5 Below are reasons some people have given for visiting national parks. How important is each of these reasons to you personally? (Circle number of best response for each reason)

	NOT AT ALL IMPORTANT	SLIGHTLY IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
To experience unique natural places	1	2	3	4	5
To experience unique historic places	1	2	3	4	5
To do something enjoyable with other people (for example, family and friends)	1	2	3	4	5
To enjoy the vastness of nature	1	2	3	4	5
To take part in outdoor recreation, such as hiking, fishing, or camping	1	2	3	4	5
To have a change from my usual surroundings	1	2	3	4	5
Please list any other reasons you like to, or would like to, visit national parks:					
_____	1	2	3	4	5

Q-6 Federal taxes are used to preserve and manage national parks. If you personally could never visit a national park, would you want any of your taxes spent to preserve and manage national parks? (Circle number)

1 DEFINITELY NO ——————> If definitely no, Skip to Question Q-8
2 MAYBE NO
3 MAYBE YES
4 DEFINITELY YES

Q-7 If you personally could never visit a national park in the future, how important to you would each of the following reasons be to spend taxes to preserve and manage national parks? (Circle number of best response for each reason)

	NOT AT ALL IMPORTANT	SLIGHTLY IMPORTANT	SOMEWHAT IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
So other members of my family will have the opportunity to visit these areas now and in the future .	1	2	3	4	5
So people outside my family will have the opportunity to visit these areas now and in the future .	1	2	3	4	5
So there will be areas preserved in their natural condition, even if no one ever goes there	1	2	3	4	5
To allow scientific research on nature or history	1	2	3	4	5
To preserve our national heritage	1	2	3	4	5
So there is not development everywhere	1	2	3	4	5
Do you have any other reasons? (Please list)					
_____	1	2	3	4	5

ABOUT POLLUTION ISSUES FACING NATIONAL PARKS

Q-8 Below are some types of effects that are happening or could happen in national parks due to people's activities outside park boundaries. What priority do you give to prevention of the following effects in national parks due to human activities outside park boundaries? (Circle number of best response for each effect)

	LOW PRIORITY	MEDIUM PRIORITY	HIGH PRIORITY
Air pollution decreasing the ability to see scenic vistas	1	2	3
Air pollution injury to vegetation	1	2	3
Air pollution damage to historic structures	1	2	3
Water pollution in streams or lakes that harms fish or other aquatic life	1	2	3
Water pollution that muddies streams or lakes but does not harm fish or aquatic life	1	2	3
Park visitors being able to see or hear mining or industrial activities located outside park boundaries	1	2	3

Are there other types of effects of special concern to you? (Please list)

_____ 1 2 3

ABOUT VISIBILITY IN AND AROUND NATIONAL PARKS

Throughout the U.S., air pollution from outside the parks causes haze that reduces how well a person can see in national parks and into scenic vistas outside park boundaries.

The enclosed photographs show different levels of air pollution at three national parks on days without rain or natural fog. The conditions at these parks are typical of summertime conditions at the national parks throughout the region in which each park is located.

Photograph A shows almost no haze. This occurs on about 18 summer days each year (about 15% of the time).

Photograph B shows a little haze. This occurs on about 24 summer days each year (about 20% of the time).

Photograph C shows average visibility conditions. This occurs on about 48 summer days each year (about 40% of the time).

Photograph D shows a lot of haze. This occurs on about 30 summer days each year (about 25% of the time).

Q-9 If you were to visit a national park in each of these regions, you would probably have average visibility like Photograph C. How do you think having somewhat less than average haze due to air pollution, like Photograph B rather than Photograph C, would affect your enjoyment of the visit? (Circle number of best response for each region)

	Having Visibility B Rather Than Visibility C Would:		
	HAVE NO EFFECT ON ENJOYMENT	SOMEWHAT INCREASE ENJOYMENT	VERY MUCH INCREASE ENJOYMENT
California ..... (Use Yosemite photos)	1	2	3
The Southwest ..... (Use Grand Canyon photos)	1	2	3
The Southeast ..... (Use Shenandoah photos)	1	2	3

Q-10 Federal and state governments are considering changes to air pollution control laws to protect and improve visibility in and around national parks. These changes could affect everyone, even those who do not visit the parks, because more air pollution controls could mean higher prices for electricity, transportation, home heating, and for many other goods and services, and could mean higher taxes.

How willing would you be to pay higher prices and taxes to support visibility protection at national parks in the following regions? (Circle number of best response for each region)

	NOT AT ALL WILLING		SOMEWHAT WILLING		EXTREMELY WILLING
California	1	2	3	4	5
Southwest	1	2	3	4	5
Southeast	1	2	3	4	5

Please list any other regions of particular importance to you.

_____

ABOUT VISIBILITY AT NATIONAL PARKS IN THE SOUTHWEST

Q-11 The photographs for Grand Canyon National Park show typical visibility conditions in the national parks of the Southwest. In the future, visibility at these national parks could improve or worsen depending on how much air pollution control is undertaken. How important do you think the following goals are for protecting visibility at national parks in the Southwest? (Circle number of best answer for both goals)

	NOT AT ALL IMPORTANT		SOMEWHAT IMPORTANT		EXTREMELY IMPORTANT
Improving visibility at some or all parks	1	2	3	4	5
Preventing visibility from getting worse at some or all parks	1	2	3	4	5

WHAT IS THE VALUE OF PROTECTING VISIBILITY AT NATIONAL PARKS IN THE SOUTHWEST?

New air pollution controls being considered for the protection of visibility at national parks in the Southwest could mean higher prices and higher taxes throughout the country. The next questions concern how much obtaining improvements and preventing worsening in visibility at national parks in the Southwest would be worth to your household.

These questions concern only visibility at national parks in the Southwest and assume there will be no change in visibility at national parks in other regions. Other households are being asked about visibility, human health and vegetation protection in urban areas and at national parks in other regions. For these questions, assume you could be sure that any change would occur next year and continue forever, and all households now and in the future would also pay the most it is worth to them to protect visibility.

Q-12 With additional air pollution controls, average visibility conditions in and around all national parks in the Southwest could improve. What is the most your household would be willing to pay every year in increased prices and taxes to have average visibility improve from Grand Canyon Photograph C to Photograph B at all national parks in the Southwest? (Circle best answer)

$0.00	$2	$8	$25	$60	$150	$400
$0.50	$3	$10	$30	$75	$200	$500
$1.00	$4	$15	$40	$100	$250	$750
$1.50	$5	$20	$50	$125	$300	MORE THAN $750

Q-13 What is the most your household would be willing to pay every year in increased prices and taxes to have average visibility improve from Grand Canyon Photograph C to Photograph A at all national parks in the Southwest? (Circle best answer)

$0.00	$2	$8	$25	$60	$150	$400
$0.50	$3	$10	$30	$75	$200	$500
$1.00	$4	$15	$40	$100	$250	$750
$1.50	$5	$20	$50	$125	$300	MORE THAN $750

Q-14 It is also possible that some additional air pollution controls may be needed just to keep visibility at national parks in the Southwest from getting worse. What is the most your household would be willing to pay every year in increased prices and taxes to prevent average visibility at all national parks in the Southwest from becoming like Photograph D for Grand Canyon rather than like Photograph C. (Circle best answer)

$0.00	$2	$8	$25	$60	$l5O	$400
$0.50	$3	$10	$30	$75	$200	$500
$1.00	$4	$l5	$40	$100	$250	$750
$1.50	$5	$20	$50	$125	$300	MORE THAN $750

Q-15 Please provide any information that helps explain your answers to Questions 12, 13, and 14 above. You may also use the back page of the questionnaire.

Q-16 We understand it may be difficult to determine the most you are willing to pay for changes in visibility at national parks. Would you say your answers to Questions 12, 13, and 14 are: (Circle number of best answer)

1 VERY ACCURATE?

2 WITHIN THE BALLPARK?

3 SOMEWHAT INACCURATE?

4 PROBABLY VERY INACCURATE?

Q-17 Would you say the dollar amounts you gave in answer to Questions 12, 13 and 14 are: (Circle number of best answer)

1 BASICALLY FOR THE STATED CHANGES IN VISIBILITY AT THE NATIONAL PARKS

2 SOMEWHAT FOR THE STATED CHANGES IN VISIBILITY AND SOMEWHAT TO HELP WITH OTHER NEEDS AT THE NATIONAL PARKS

3 BASICALLY TO HELP THE NATIONAL PARKS AND ARE NOT RELATED TO THE STATED CHANGES IN VISIBILITY

4 OTHER (Please specify) _____

→ About what percent of your dollar answers is for visibility at national parks in the Southwest? (Circle number)

NONE		SOME		HALF		MOST				ALL
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Q-18 Of the money you would be willing to pay to control haze in and around national parks in the Southwest, about what percent do you think should be spent to control haze in and around Grand Canyon National Park? (Circle best answer)

NONE		SOME		HALF		MOST				ALL
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Q-19 About what percent of the dollar amount you stated you would be willing to pay for improving visibility conditions in and around national parks in the Southwest can be explained by the following reasons? (Answers should total to 100%)

_____% SO MY HOUSEHOLD AND I COULD ENJOY CONDITIONS AS NATURAL AS POSSIBLE ON VISITS TO NATIONAL PARKS IN THE SOUTHWEST

_____% SO OTHERS, NOW AND IN THE FUTURE, COULD ENJOY CONDITIONS AS NATURAL AS POSSIBLE ON VISITS TO NATIONAL PARKS IN THE SOUTHWEST

_____% TO HAVE CONDITIONS AS NATURAL AS POSSIBLE AT NATIONAL PARKS IN THE SOUTHWEST, EVEN IF NO ONE WERE TO EVER VISIT

_____% OTHER (please explain) _____

=100 % _____

ABOUT YOU AND YOUR HOUSEHOLD

Q-20 "Where do you live? (Circle number of best answer)

1 A LARGE METROPOLITAN AREA (Over 1 million people)
2 A LARGE CITY (100,000 to 1 million people)
3 A SHALL CITY OR TOWN (10,000 to 100,000 people)
4 A VERY SMALL TOWN OR RURAL AREA (under 10,000 people)

Q-21 How far do you live from the nearest national park? (Circle number)

1 LESS THAN 50 MILES
2 50-99 MILES
3 100-199 MILES
4 200-499 MILES
5 500-999 MILES
6 1000 MILES OR MORE
7 I DON'T KNOW

Q-22 What is the name of the nearest national park? _____

Q-23 Your sex? (Circle number)

1 MALE 2 FEMALE

Q24 Your present age? _____ YEARS

Q-25 Are you presently? (Circle number of best answer)

1 EMPLOYED FULL-TIME
2 EMPLOYED PART-TIME
3 FULL-TIME HOMEMAKER
4 UNEMPLOYED
5 RETIRED
6 STUDENT

Q-26 Including yourself, how many members of your household are in each age group? (If none, write "0")

UNDER 18 YEARS Of AGE
18 TO 64 YEARS OLD
65 YEARS AND OVER

Q-27 How much formal education have you completed? (Circle number)

1 NO FORMAL EDUCATION
2 SOME GRADE SCHOOL
3 COMPLETED GRADE SCHOOL
4 SOME HIGH SCHOOL
5 COMPLETED HIGH SCHOOL
6 SOME COLLEGE OR TRADE SCHOOL
7 COMPLETED TRADE SCHOOL
8 COMPLETED COLLEGE
9 SOME GRADUATE WORK
10 ADVANCED COLLEGE DEGREE

Q-28 What was the approximate annual gross income (before taxes) received in 1987 by you and family members living with you? (Circle number)

1 UNDER 510,000
2 $10,000-19,999
3 $20,000-29,999
4 $30,000-39,999
5 $40,000-49,999
6 $50,000-59,999
7 $60,000-69,999
8 $70,000-79,999
9 $80,000-89,999
10 $90,000-99,999
11 MORE THAN 5100,000
12 CHOOSE NOT TO ANSWER

Is there anything we may have overlooked? Please use this space for additional comments you would like to make about managing natural resources and visibility at national parks.

Please return questionnaire to: Managing The Parks
RCG/Hagler, Bailly
P.O. Drawer O
Boulder, Colorado 80306-1906

Your help is greatly appreciated. If you wish to receive a summary of results, print "results requested" on this page. We will see that you receive it.

SW3

APPENDIX B

Sample Letters

RCG/Hagler, Bailly, Inc.

P. O. Drawer O
Boulder, Colorado 80306-1906
303/449 5515 ■ Fax: 303/443 5684

August 22, 1988

Dear

The national parks have been set aside as special resources. Yet, the management and protection of national parks involve costs to each of us. Therefore, decisions about how to protect and manage the parks should consider the opinions of all people in the country.

I have a favor to ask of you. In about a week you will receive in the mail a questionnaire and color photographs of national parks. The questionnaire asks about your visits to national parks and asks your opinions about managing and protecting national park resources. Your opinions are important, even if you do not visit national parks.

Because we can send only a few questionnaires, we have scientifically selected households to reflect the opinions of citizens from around the country. Your response is very important.

RCG/Hagler, Bailly, Inc. is a professional research firm hired to help conduct this study for the University of Colorado. You will receive your questionnaire from us along with a postage paid return envelope. The results will be provided to the National Park Service, and to all other interested parties.

Thank you in advance for any help you can provide.

Sincerely,

Robert D. Rowe
Project Manager

RCG/Hagler, Bailly, Inc.

P.O. Drawer O
Boulder, Colorado 80306 1906
303/449 5515 ■ Fax: 303/443 5684

September 6, 1988

Dear

Here is the questionnaire I told you about in my letter a few days ago. People have filled it out say it takes about 20 to 25 minutes to complete (sometimes more, sometimes less). Your responses will help provide an understanding of what all citizens want and don't want with regard to protection of the resources at national parks.

Your questionnaire should be filled out by either the male or female head of household. Your response is very important because you are part of a relatively small sample of people from around the country who have received this survey. The questions do not require scientific knowledge, only that you consider and answer each question as well as you can.

Your response will be confidential. Results will only be reported statistically, such as "20% have visited Yosemite National Park." The enclosed form has a number for mailing purposes only, so we may check your name off the follow-up mailing list when you return the questionnaire to us.

The results will be made available to the National Park Service and t all other interested parties. If you would like, we will send you a summary of the results. Simply write "results requested" on the back page of the survey and I will see that you get them.

RCG/Hagler, Bailly has been hired to help conduct this survey, so your completed questionnaire should be sent directly to our office. A postage paid, self-addressed envelope is enclosed for your convenience. I will be happy to answer any questions you might have. Please write or call. We appreciate your assistance.

Sincerely,

Robert D. Rowe
Project Director

P.S. Since we know that your time is valuable, we offer the enclosed gift as a token of our appreciation for your help.

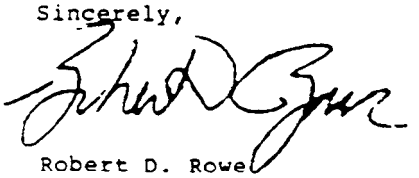
September 7, 1988

Last week a questionnaire was mailed to you seeking your opinions about the preservation and management of the national parks. Your name was drawn from a scientific random sample of U.S. citizens.

If you have already completed the questionnaire and returned it to us, please accept our sincere thanks. If not, please do so today. Because it has been sent to only a small number of households around the country, it is extremely important that your opinions be included in the study to accurately represent the opinions of all citizens nationwide.

If you did not receive the questionnaire, or if it got misplaced, please call me collect at (303) 449-5515, and I will put another one in the mail to you today.

Sincerely,



Robert D. Rowe
RCG/Hagler, Bailly, Inc.
Project Director

RCG/Hagler, Bailly, Inc.

P.O. Drawer O
Boulder, Colorado 80306 -,1906
303/449 5515 Fax: 303/443 5684

September 23, 1988

Dear

Three weeks ago I wrote to you asking for your opinions about the protection and management of national parks. As of today, we have not received your completed questionnaire.

The University of Colorado and RCG/Hagler, Bailly, Inc. are conducting this research to help decision makers in government and industry better understand how citizens like you want the air quality resources in and around national parks to be managed.

I am writing to you again because the opinions of each household selected are important to this study. For the results to be truely representative of households from around the country, it is essential that each person in the sample return the questionnaire. Even if you feel that you know very little about air pollution at national parks, your opinion is valuable and still counts.

In the event that our questionnaire was misplaced, a replacement is enclosed. If you should have any questions, please call me collect at (303) 449-5515.

Your assistance is greatly appreciated.

Sincerely,

Robert D. Rowe
Project Manager

RCG/Hagler, Bailly, Inc.

P O Drawer O
Boulder. Colorado 80306-1906
303/449 5515 ■ Fax. 303/443 5684

November 2, 1988

Dear

Some weeks ago I wrote asking for your help on a survey concerning visibility at National Parks. So far, we have not received your completed survey.

Several people have called me saying they wi11 probably never visit the parks we asked about. Even if you will never visit these parks, decision makers in government must learn if you feel it is important or unimportant to protect or improve visibility at national parks and why you feel this way. The decisions they make can affect the taxes and prices you pay, regardless of how often you visit the parks.

Other people have told me some of the questions are hard to answer. These are also hard questions for decision makers to answer without your input. We are asking you to answer the best you can. If you feel your answers are inaccurate, please tell us by writing this next to your answers.

Because you are part of a small group scientifically selected to represent all of the public's opinions, your response is very important to us. In case you have misplaced your survey, we have enclosed another. If you have any questions, please call me, collect, at (303) 449-5515. As I have indicated, all your responses wi11 be held strictly confidential.

Sincerely,

Robert D. Rowe
Project Manager, "Managing the Parks"

RDR; jlw

APPENDIX C

Sample Telephone Follow-up Survey Instrument

PARVU PHONE FOLLW-UP Version 2
Focus Region: Grand Canyon/Southwestern U. S.

Codes: 8 , 88 = Don't Know; 9,99 = Missing or Refused

Hello, is this _____ ? My name is _____, and I'm calling from CIC Research. We're working with the University of Colorado.

Several weeks ago we sent you a printed survey about visibility at the national parks. I'm calling as part of a short telephone follow-up to the mail questionnaire (but this is not the mail questionnaire.) This follow-up is being done to find out how people who did not respond to the mail survey differ from those who completed the survey. This information is important to help us understand the responses to the mail survey. We would appreciate if you could answer a few questions that will take about 5 minutes.

ID _____ (1-3)

Q1 It this a convenient time to talk? __1__ NO __2__ YES — AGREE _____ (4)

Q2 Have you ever personally visited any national park, (including monuments and seashores)? __1__ NO __2__ YES — VISIT _____ (5)
└──> **Skip to Q4**

Q3 Have you personally ever visited Grand Canyon National Park?

__1__ NO __2__ YES ——> (If Yes) How many days have you visited this park in just the last two years? _____ DAYS

VYOS _____ (6)
DYOS _____ (7-8)

Q4 In the next 5 years, do you think you "Definitely Will Visit", "Might Visit", or "Definitely Will Not Visit" a national park in the southwestern United States?

> Examples of parks in the Southwest are Bryce Canyon, Zion, Saguaro, Petrified Forest, and Carlsbad Caverns.

__1__ DEFINITELY WILL __3__ MIGHT __5__ WILL NOT
__8__ REFUSED __9__ DON'T KNOW

FVISIT _____ (9)

Q5Do you have the national park photographs we mailed you?

__1__ NO ——————————————————————> Skip to Q9.

__2__ NO, BUT I REMEMBER THEM. ——————> Skip to Q9.

__3__ YES ——> I would like to ask you a few short questions about the photographs. Could you get them? HAVE ____ 10

__1__ NO __2__ YES GET ____ 11

In the future, visibility at national parks of the southwestern U.S. could improve or worsen, depending upon how much air pollution control is undertaken. But any changes in air pollution control could affect everyone through higher prices for electricity, transportation, home heating and for many other goods and services or through higher taxes.

—————————— YES, THEY HAVE PHOTOS TO LOOK AT ——————————

The next questions concern only the pictures for Grand Canyon, which are typical of conditions at all national parks in the south. western U.S. The typical summer visibility is like Photograph C.

Q6 Do you think it is "Not At All Important", "Somewhat Important", or "Extremely Important" to prevent visibility from getting worse, like Photo D, at national parks in the Southwest?

__1__ NOT AT ALL __3__ SOMEWHAT __5__ EXTREMELY WORS1 ____ 12

Q7 Would you support new air pollution controls to prevent typical summer visibility from decreasing from Photo C to Photo D at all national parks in the Southwest if it cost your household $25 a year?

__1__ NO __2__ YES ——> Skip to Q8. WTP1 ____ 13

Would you support new air pollution control regulation to prevent typical summer visibility from decreasing from Photo C to Photo D at all national parks in the soutwest if it cost your household $5 a year?

__1__ NO __2__ YES WTP2 ____ 14

$ _____ (Provided, if any) WTP1S ____ 15-1

(Why/why not? If provided) WHY ____ 18-19

Q8 Do you think it is "Not At All Important", "Somewhat Important", or "Extremely Important " to improve visibility so it should be like Photo B, at national parks in the Southwest?

__1__ NOT AT ALL __3__ SOMEWHAT __5__ EXTREMELY IMPR1 ____ 20

Q9 Would you support new air pollution controls to increase typical summer visibility from Photo C to Photo B at all national parks in the Southwest if it *cost* your household $25 a year?

__1__ NO __2__ YES WTP$3 ____ 21

$ (provided, if any) WTP2$____ 22-24

Skip to Q14.

NO, THEY DO NOT HAVE PHOTOS

Q10 Do you think it is "Not At All Important", "Somewhat Important", or "Extremely Important" to prevent visibility from getting somewhat worse at national parks in the southwestern United States?

> Examples of parks in the Southwest are Bryce Canyon, Zion, Saguaro, Petrified Forest, and Carlsbad Caverns.

__1__ NOT AT ALL __3__ SOMEWHAT __5__ EXTREMELY WORS2 ____ 25

Q11 Would you be willing to pay any more in increased prices or taxes to support new air pollution controls that would prevent typical visibility from becoming somewhat worse at all national parks in the Southwest?

__1__ NO __2__ YES __3__ Don't Know WTP4 ____ 26

Q12 Do you think it is “Not At All Important", "Somewhat Important", or "Extremely Important" to improve visibility at national parks in the Southwest?

__1__ NOT AT ALL __3__ SOMEWHAT __5__ EXTREMELY IMPR2 ____ 27

Q13 Would you be willing to pay any more in increased prices or taxes for new air pollution controls that would somewhat improve typical visibility at all national parks in the southwest?

__1__ NO __2__ YES __3__ Don't Know

WTP5 ____ 28

Now, just a few last questions to help group your responses with those of others:

Q14 Do you live in:

1 A LARGE METROPOLITAN AREA of Over 1 million people
2 A LARGE CITY of 100,000 to 1 million people
3 A SMALL CITY OR TOWN of 10,000 to 100,000 people
4 A VERY SMALL TOWN OR RURAL AREA of Under 10,000 people

WHERE ___ 29

Q15 How far do you live from the nearest national park? Would you say it is:

1 LESS THAN 50 MILES
2 50 - 99 MILES
3 100 - 199 MILES
4 200 - 500 MILES
5 500 - 1,000 MILES
6 MORE THAN 1,000 MILES
(7 I DON'T KNOW)

MILES____ 30

Q16 What is the name of the nearest national park?

_____

PARK _____ 31-33

Q17 What is your present age? _____

AGE ____ 34-35

Q18 Including yourself, how many people are in your household?

HH _____ 36-37

Q19 What was your total household income in 1987 before taxes and deductions? Would it be:

1 - UNDER $20,000
2 - BETWEEN $20,000 AND $40,000
3 - BETWEEN $40,000 AND $60,000
4 - BETWEEN $60,000 AND $80,000
5 - OVER $80,000
6 - REFUSED TO ANSWER

INC _____ 38

Thank you. That's all the questions I have.

Interviewer, add:

Q18 Sex: 1 - MALE
2 - FEMALE

SEX _____
39

Q19 Comment:

COMM1_____
40-41

Q20 Interviewer number

INT#_____
42

Q21 Language

0 NO LANGUAGE BARRIER
1 POSSIBLE LANGUAGE BARRIER
2 DEFINITE LANGUAGE BARRIER

LANG_____
43

Q22 Other Comments:

COMM2_____
44-45